

REMARKS

Applicant respectfully requests re-consideration of the application as amended.

Summary of Office Action

Claims 1-20 are pending.

Claims 17-18 were rejected under 35 U.S.C. § 112

Claims 1-6, 19-20 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 5,323,461 of Rosenbaum, et al. ("Rosenbaum").

Claims 17-18 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 4,473,719 of Embree, et al. ("Embree").

Claims 7-16 were rejected under 35 U.S.C. § 103 as being unpatentable over Rosenbaum in view of Embree.

Summary of Amendments

Claim 17 was amended. Applicant respectfully submits the amendments to claim 17 do not add new matter.

Response to 35 U.S.C. § 112 rejection

Claims 17-18 were rejected under 35 U.S.C. § 112. In particular, the Examiner indicated that "an inverted first sense current, the inverted first current, a second current" were inconsistent. Claim 17 was amended. Applicant respectfully submits the rejection under 35 U.S.C. § 112 has been overcome.

Response to 35 U.S.C. § 102 rejection

Claims 1-6, and 19-20 were rejected as being anticipated by Rosenbaum. Applicant respectfully submits claims 1-6 and 19-20 are not anticipated. In

particular, Rosenbaum does not teach or suggest pull-down circuitry operating in a first voltage domain, and control circuitry operating in a second voltage domain, wherein the first and second voltage domains are substantially distinct.

The Examiner has stated in part

Rosenbaum teaches a method comprising providing subscriber loop pull-down circuitry (10-11) operating in a *first voltage domain (on-hook)*, wherein the subscriber loop pull-down circuit decreases at least one of a tip and a ring line current (approx. < 13 ma) in response to a corresponding pull-down control signal (control signals 17-18); and providing control circuitry operating in a *second voltage domain (off-hook) wherein the first and second voltage domains are substantially distinct (off-hook > 13ma, on-hook current < 13mA; col. 5, ln. 29-47)*, wherein the control circuitry (control circuit 15; col. 2, ln. 5-68) varies the pull-down control signal in response to a sensed current (sensing circuit 12) corresponding to an associated one of a tip-pull down current and a ring pull-down current (col. 5, ln. 22 to col. 6, ln. 68; col. 8, ln. 39-65).

(11/05/2003 Office Action, p. 3)(*emphasis added*)

Applicant respectfully submits that element 11 is switching circuitry rather than "pull-down circuitry". Although Rosenbaum uses a *current threshold* of 13 mA to differentiate between the on hook and off hook states, applicant respectfully submits that this is irrelevant to the claimed *voltage domains*. *The Examiner is referring to current domains rather than voltage domains.*

Next, applicant respectfully submits Rosenbaum's line driver 10 operates during *both* the on-hook and off-hook states. Similarly, control circuitry 15 works during *both* the on-hook and off-hook states. The Examiner has not shown that the control circuitry 15 operates in a voltage domain that is distinct from that of the line driver 10. *Applicant respectfully submits that Rosenbaum does not teach or suggest 1) providing a subscriber loop pull-down circuitry operating in a first voltage domain; and 2) providing control circuitry operating in a second voltage domain, wherein the first and second voltage domains are substantially distinct.*

In contrast, claims 1 and 6 include the language:

1. A method comprising the steps of:

- a) *providing subscriber loop pull-down circuitry operating in a first voltage domain, wherein the subscriber loop pull-down circuitry decreases at least one of a tip and a ring line current in response to a corresponding pull-down control signal; and*
- b) *providing control circuitry operating in a second voltage domain wherein the first and second voltage domains are substantially distinct, wherein the control circuitry varies the pull-down control signal in response to a sensed current corresponding to an associated one of a tip pull-down current and a ring pull-down current.*

(Claim 1, as amended)(*emphasis added*)

6. A subscriber line interface circuit apparatus, comprising:

- pull-down circuitry operating in a first voltage domain, wherein the pull-down circuitry varies a current of a selected one of a tip and a ring line in response to a pull-down control signal;*
- control circuitry providing the pull-down control signal, the control circuitry operating in a second voltage domain substantially distinct from the first voltage domain;*
- a control isolation stage coupled to provide the pull-down control signal from the control circuitry to the pull-down circuitry; and
- a feedback isolation stage providing feedback signals from the pull-down circuitry to the control circuitry, wherein the feedback signals represent a sensed pull-down current associated with the selected line , wherein the control circuitry provides the pull-down control signal for the selected line in response to the sensed pull-down current.

(Claim 6, as amended)(*emphasis added*)

Thus applicant submits claims 1 and 6 are not anticipated by the cited reference.

With respect to the Examiner's further comments on claim 6, the Examiner appears to be stating that the control circuit 15 only operates when off-hook and the driver circuit only works when the on-hook. Applicant submits that both the control and the driver circuit operate during on-hook and off-hook modes. There is no support for the Examiner's apparent allegation. The remainder of the explanation is somewhat nonsensical. The BR signal, for example, is a battery return that is zero or ground. Control voltage generator

(CVG 14) is not a control isolation stage. CVG is the driver supply rather than a control to the driver supply.

With respect to claims 19-20, the Examiner stated in part:

Rosenbaum teaches ... a linefeed driver (10) responsive to pull-up and pull down control signals (BR) to vary at least a selected one of a tip and ring current of a subscriber loop (col. 5, ln. 22 to col. 6, ln. 68; col. 8, ln. 39-65)..

(11/05/2003 Office Action, p. 4)

Applicant respectfully submits that BR is a "battery return" (i.e., ground or zero volts) and thus is neither a pull-up nor a pull-down signal for varying the tip or ring currents. (Rosenbaum, col. 3, line 64-67). Rosenbaum switches between supplying the driver 10 with either a battery supply (BV) or the output of a voltage controlled generator using switching circuit 11. There cannot be any varying of either the tip or the ring in response to BR as alleged by the Examiner.

The Examiner has analogized Rosenbaum's control circuit 15 to applicant's signal processor and driver circuit 10 to applicant's linefeed driver. Applicant respectfully submits that Rosenbaum is silent on the issue of integrated circuits, whether any of the components including control circuit 15 are integrated circuits, or whether the driver circuit 10 would be incorporated into the same integrated circuit as control circuit 15. Applicant submits that the reference cannot be an anticipatory reference with respect to limitations that are not taught anywhere in the reference.

Applicant thus respectfully submits Rosenbaum does not teach or suggest a linefeed driver and a signal processor sensing a pull-down current of a selected one of a tip and a ring line into a battery feed node....wherein the linefeed driver does not reside within a same integrated circuit package as the signal processor.

In contrast, claim 19 includes the language:

19. A subscriber line interface circuit apparatus comprising:
a linefeed driver responsive to pull-up and pull-down control signals to vary at least a selected one of a tip and a ring current of a subscriber loop; and
a signal processor sensing a pull-down current of the selected one of the tip and ring lines into a battery feed node, the signal processor generating pull-down control signals for the selected current in response to the sensed pull-down current, wherein the linefeed driver does not reside within a same integrated circuit package as the signal processor.

(Claim 19, as amended)(emphasis added)

Applicant thus respectfully submits claim 19 is not anticipated by

Rosenbaum.

Claims 17-18 were rejected as being anticipated by Embree. Applicant notes that the Examiner has yet again confused voltages and currents (e.g., equating V_{REF} to "second current"). V_{REF} does not identify a current. Applicant notes that no appreciable current would flow into the V_{REF} input of amplifier 304. Finally, given that the input to amplifier 304 is a *voltage*, amplifier 304 cannot be a *transimpedance* amplifier as alleged by the Examiner (see, e.g., 11/05/2003 Office Action, p. 5).

Although the Examiner has listed elements of Embree, applicant respectfully submits that the Examiner is not free to ignore the limitations of the claim language or to reduce the claim to a gist. For example, applicant respectfully requests the Examiner to identify the second sense current, transimpedance amplifier, and either a pull-down tip or a pull-down ring current.

Applicant respectfully submits Embree does not teach or suggest a *transimpedance amplifier coupled to receive the inverted first sense current and a second sense current, the transimpedance amplifier providing a sense signal proportional to a difference between the first and second sense currents, wherein the sense signal is proportional to a pull-down current flowing into a battery feed node of a subscriber loop.*

In contrast, claim 17 includes the language:

17. An apparatus, comprising:

a current mirror providing an inverted first sense current from a received first sense current; and

a transimpedance amplifier coupled to receive the inverted first sense current and a second sense current, the transimpedance amplifier providing a sense signal proportional to a difference between the first and second sense currents, wherein the sense signal is proportional to a pull-down current flowing into a battery feed node of a subscriber loop, wherein the pull-down current is approximately the same as one of the subscriber loop tip and ring currents associated with the first and second sense currents.

(Claim 17, as amended)(*emphasis added*)

Applicant thus respectfully submits claim 17 is not anticipated by Embree.

Given that claims 2-5 depend from claim 1; claims 7-16 depend from claim 6; and claim 20 depends from claim 19, applicant submits claims 2-5, 7-16, and 20 are not anticipated by the cited reference.

Applicant respectfully submits that the 35 U.S.C. § 102 rejections have been overcome.

Response to 35 U.S.C. § 103 rejection

Claims 7-16 were rejected as being unpatentable under 35 U.S.C. § 103 in view of Rosenbaum and Embree. No obviousness rejection was given with respect to the independent claims.

Applicant respectfully submits that claim 6 is patentable under 35 U.S.C. § 103 in view of Rosenbaum and Embree for the same reasons presented above with respect to the 35 U.S.C. § 102 rejections.

Given that claims 7-16 depend from claim 6, applicant respectfully submits claims 7-16 are likewise patentable over the cited references for the same reasons cited above.

Applicant respectfully submits the rejections under 35 U.S.C. § 103 have been overcome.

Accompanying Information Disclosure Statement

An Information Disclosure Statement accompanies this Amendment. The Examiner may find these references useful given that they provide different levels of detail from 5,323,461 of Rosenbaum despite the fact that they all claim the same priority date and document.

Conclusion

In view of the amendments and arguments presented above, applicant respectfully submits the applicable rejections and objections have been overcome. Accordingly, claims 1-20 as amended should be found to be in condition for allowance.

If there are any issues that can be resolved by telephone conference, the Examiner is respectfully requested to contact the undersigned at (512) 306-9470.

Respectfully submitted,
DAVIS & ASSOCIATES

Date March 5, 2004

William D. Davis
William D. Davis
Reg No. 38,428